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ABSTRACT

Transactional perception theory suggests understandings that can affect the adoption of educational change. The pace of educational change should maintain a gap between a person's external conditions and the person's assumptions about himself and the world (constancies) that is great enough to be stimulating but not so great as to render actions ineffective and frustrating. Measurement of this gap should be in terms of actions required in the new situations. Maintenance of sustained, gradual change is likely to produce a set of constancies supporting change. To the extent that these constancies are developed, the pace of change can be speeded up. Verbal training is likely to be ineffective; training geared to the actual actions required is the most effective. To the extent that individuals are involved in the planning of change, the gap between their perceptual constancies and their new conditions will be reduced, thus lowering their resistance to change and increasing their effectiveness in the new situation. (Author/IRT)

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Educational Change:
A Perceptual Approach

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Problems in Educational Change:
A Perceptual Approach

Abstract- A number of researchers and theorists have identified characteristics of the organization, persons involved and innovation which have the effect of slowing the adoption of educational changes. This paper is complementary to those approaches in that it provides a theoretical framework to explain some of their findings and supplements others. Educational change is delayed by resistance to the innovations and by the inability to implement them properly. Resistance to innovations can be partly explained by non-perceptual factors such as lack of incentives, loss of status, etc. Perceptual theory indicates that an important problem is the threat to the participants' social constancies, self and others. The extent of the probable resistance can be determined by examining the amount of change required in those constancies. Problems in implementation can occur quite apart from any resistance to the innovation, conscious or unconscious. Practically by definition the participants assumptive framework is ill-suited for acting in the context of the new system. This leads to inappropriate or slow and inept performance until a new framework can be established. Perceptual theory and research suggest a number of possible actions that can be taken to alleviate these problems.

The rise of Sputnik into earth orbit launched not only the dawn of the space age, but a major era in American education. The failure of the United States to be first in space led to a questioning of the American education system. This was followed by concern over educational deficits among minority children. These concerns together with millions of dollars of Federal money produced an era of educational change. Federally sponsored educational research and development laboratories were created. They joined universities, private companies, and school districts in producing and implementing literally thousands of new educational programs. These programs varied in their nature from old programs simply renamed to radical revisions in method, curriculum and goals. While the tempo of change has ebbed along with the funding for it, there remain major factors supporting further educational change. Jesser (1976) lists the changing character of the American populace, changes in social structure, the knowledge explosion and a variety of new social processes as contributing to the need for continued educational change. Education remains at the heart of many key political issues such as busing, school texts, and "basic" education. The pot of educational change and ferment may not boil over, but it will continue to do more than simmer.

Which leaves the question of how to execute and implement educational changes, most especially changes

that are productive. The change process in education has received considerable study primarily because of a concern with its slowness and inefficiency. It has been estimated (Mort, 1964) that educational innovations typically take roughly a decade to get started, spread rapidly for a couple of decades and then mop up slowly over another couple of decades. Miles (1964) compares the spread of innovations in education unfavorably to those in industry, agriculture or medicine.

A number of conceptualizations of the change process in education have identified factors which hinder the adoption of new ideas.

Theories- There are a number of approaches to explaining the change process in education. Most emphasize structural and organizational factors. One of the major descriptions is a synthesis of a number of contributors' work done by Miles (1964). The U.S. educational system is viewed as a national system with a number of subsystems. Graduate departments of education have the most influence in the system. Since it is a national system the spread of innovations is expensive and difficult. A number of factors contribute to a slow rate of diffusion. Among the systemic causes are lacks of hard data (Johnson, 1964 reported that of 1507 school districts receiving NDEA Title III funds, only 10 had carried out research based evaluations), lack of change agents and lack of economic incentives for people within the system to innovate.

Myths of local autonomy and individual professionalism are viewed as concealing a large bureaucratic system which also impedes progress. Characteristics of the innovations also contribute to their speed of adoption. Innovations which have high unit or initial cost, are not suitable for commercial production or are "research" tend to spread slowly. Innovations with support services, high innovation-system congruence, or facets which increase autonomy and peer support are likely to spread quickly. Innovators are seen as coming from outside the existing system. Within the system authority figures are the key. The creation of temporary sub-systems may help by-pass internal blocks. The surrounding context may help overcome or reinforce organizational inertia depending on its exact nature. Shifts within the organization may create an internal need for change, but this is viewed as occurring rarely. Figure 1 illustrates one conception (MacKenzie, 1964) of this process.

Griffiths (1964) proposed a system theory of organization which emphasizes an organization's tendency to maintain itself against changes. As viewed by this theory changes are the result of outside pressure. The degree and duration of change is directly related to the outside pressure. Change is more likely if the head of the organization has come from outside of it. Response to a continuously increasing pressure on the organization is no change, then over-compensation and (if the pressure is maintained) collapse. The number

of innovations adopted is inversely related to the length of tenure of the head of the organization. Also the more heirarchical an organization is, the less likely it is that it will adopt changes. When change in an organization does occur, it comes from the top down. The more functional and productive the existing interrelationships of organizational subsystems, the less likely it is that change will occur. In summary this theory sees the organization as basically resisting change. Appointment of outsiders as head of the organiation, especially with strong exterior support for innovation will help produce change. The longer the tenure of the head, the more heirarchical the organization and a low level of internal conflict will heighten the resistance to change.

A recent article by House (1976) also stresses organizational and structural characteristics. Innovation is seen as primarily depending on face-to-face contact. Face-to-face contact depends, in turn, on organizational structure and lines of physical transportation. The superintendent and his key staff are central to the change process because they are in position to have most outside contacts. Since innovations generally come through the central staff, its politics have an important bearing on whether innovation will occur. One necessary condition for the success of an innovation is for it to gain an advocacy group within the organization. While the central staff is key, it is important

to realize that innovation is unlikely to come from the bottom. Teachers have limited access to outside contacts as well as few tangible rewards or incentives for innovation. The contingencies that govern the behavior of the teacher, the administrator and the reformer are likely to be very different. This makes what seems rational to one, ridiculous to the others. Innovation can be enhanced (or decreased) by increasing (decreasing) outside contacts and by increasing (decreasing) the incentives for change. Figure 2 summarizes the forces operating to aid and impede education mentioned by these authors.

Research- Besides the factors mentioned in these general descriptions of the change process, a number of factors have been identified by specific research. Mort's (1964) extensive research led him to the conclusion that innovation was closely related to the economic status of the surrounding community. More recent research (Carlson, 1965) did not confirm this finding. Instead Carlson (1965) found that the rate of adoption was closely related to characteristics of the superintendents of schools. Figure 3 lists characteristics of superintendents who were adopters of innovation as well as non-adopters. This research also failed to support some earlier findings that the rate of adoption was related to characteristics of the innovation itself. When innovations were rated as to their relative advantage over existing practices, compatability with the existing values, complexity, ability to be used on a limited basis and communicability

the ratings failed to provide a strong guide to the rate or adoption.

Findings by Lukas and Wohlleb (1972) tend to support the idea that implementation is aided by support services. In studying the implementation of Head Start planned variations, they found that implementation was related to the amount of sponsor involvement, training of model personnel, amount of sponsor feedback, sponsor involvement in areas other than directly related to the model, and school administrative efficiency. However, even with these factors relatively constant there was still considerably differences in receptivity from school to school.

Another research approach is the case study of an individual innovative educational organization. Watson (1964) described the creation, life and ultimate closure of the New College on the campus of the Columbia Teacher's College between 1932 and 1938. It was founded and supported by Columbia. It attempted to apply the ideas that individual differences are important; actual learning should be evaluated; the students should be active participants; a breadth of experience should be sought and the faculty and students should work in close association. Watson identifited a number of problems that arose. There was considerable insecurity among both students and faculty. This was partly a cause and a result of frequent program revisions. Students and faculty were selected from among the

the disaffected. This resulted in a continuing revolt. The structure worked to create additional financial burdens on both student and faculty. No attempts were made to contact outside groups that were likely to be supportive. As a result there was little outside support, and any deviant behavior was taken as a sign, by outsiders, that the experiment had failed. There was a strong internal pressure to minimize any external threats to the existence of New College.

A similar experiment on the elementary level was studied by Smith and Keith (1971). In this case the school superintendent strongly supported a radical new conception of the elementary school. Support included the creation of a new building as well as temporary insulation from some of the constraints of existing policy. In this case the innovators chose to pursue a policy of multiple changes through the creation of a number of temporary subsystems and the use of staff with little committment to the existing system. Among the changes attempted were an open plan school, team teaching, democratic administration, and individualized curriculum and instruction. Besides the temporary exception from school policies, other temporary subsystems included a month-long summer workshop for the entire faculty, T-groups, and outside consultants. The staff was purposely choosen to be young, inexperienced, and largely unknown to each other. Figures 4 and 5 show some of the consequences of these

practices, both anticipated and unanticipated.

Other investigators have focussed their attention on characteristics of the individual. In studying alternative schools Argyris (1974) has identified characteristics of the existing cultural model which tend to act at cross purposes to the verbal theories existing within some of the schools. Specifically, the characteristics of the existing cultural behavior model include achieving the person's own goals as he perceives them, maximizing personal winning while minimizing losses, minimizing elicited negative feelings, and being rational and unemotive. This cultural model conflicts in many ways with the philosophy espoused by the schools studied by Argyris.

Resistance to innovation within the public schools may be an unanticipated consequence of the socialization process (Anderson, 1968). New teachers must serve a probationary period in order to achieve tenure. During this period the teachers tend to play it safe. They also tend to adopt the personality characteristics promoted by a bureaucratic organization, such as formal, impersonal, legalistic conduct. Anderson's findings also tend to support the structuralist positions of Miles (1964).

A Perceptual Approach- With the wealth of factors identified by previous thinking and research, what does a perceptual approach to this problem have to offer? The organizational/structural factors that comprise the bulk of the points raised in the previous section

are complemented by the more individual and unconscious factors isolated by a perceptual approach. These factors can be used to identify approaches that will tend to increase the acceptance of innovations at the individual level.

The viewpoint adopted here is that of the Transactional School (Ames, Cantril, Ittelson, Kilpatrick and others in Kilpatrick, 1961). The transactional viewpoint starts from the observation that there is no unique configuration between any retinal image and an object in the environment. For any retinal image there are an infinity of objects that can fit within the parameters required to produce the specific retinal image. While other factors limit the actual range of the objects that will be perceived as identical, such demonstrations as the distorted room (Ittelson and Kilpatrick, 1961) clearly show the wide range of different situations that will be perceived as identical. The only basis on which to choose from this infinity of interpretations of the stimulus situation is past experience. This choice of interpretations is done automatically on an unconscious basis. There seems to be an assumption about the meaning of the stimulus that is built up. Kilpatrick (1961) defines an assumption as "that generally unconscious aspect of the transactional process which may be described as a weighted average of past experience in dealing with those portions of impingements from the environment to which it is related." The process by which an

assumption is built up is illustrated by Figure 6.

The totality of the assumptions that are built up is the individual's assumptive framework. This framework provides the individual a continuity or constancy in dealing with the external world. The concept of constancy has wide applicability in perceptual theory. A constancy is a generalization that is relatively independent of a given reference point. Without constancies action would be impossible. For instance the process of catching a ball requires that the ball be perceived as an object of constant size moving toward the person rather than a series of objects at a constant distance growing in size. This is an example of object constancy. More generally Kilpatrick (1961) identifies the functions of constancies as being the provision of a generalized prognosis of the range of possibilities leading to an assessment of the particular action required.

Implicit in this process is another element, a generalized prognosis about self or a self-constancy. Thus the total process consists of a general prognosis about the external world combined with a generalized prognosis about self leading to an assessment of the particular action required. Constancies in the external world can be divided into those relating to objects and people. Of the two the social constancies are far more varied. Because people act purposefully there is an added dimension to interpreting their actions. While not suggested by

the Transactionalists themselves, one could extend their basic observation to this situation as well. For social actions there are not only an infinity of possible physical stimulus situations that could produce a given impingement, there are also an infinity of possible motivational contexts that could result in a given physical stimulus situation. Put simply, any action by a person could have resulted from any of an infinity of situations and purposes that could be conceived to produce that act. In most cases people perceive the motivational context directly in the sense that they infer it from their assumptive framework rather than by a process of conscious reasoning.

Relation to Change Process- The assumptive framework that an individual has relates to the change process by effecting an individual's resistance to change and ability to act within the changed environment. In dealing with this it should be clear that the assumptive framework is largely unconscious. The factors relating to the change process dealt with here are not those based on rational or conceptual processes. Thus an individual may resist change because that change may lead to the loss of a job or because of some reasoned principled belief in opposition to the change. These types of factors are not being dealt with here. Instead the processes resulting from the conflict of the assumptive framework with the changed external conditions are investigated.

Educational change can threaten an individual's self-constancy. Self-constancy is intimately connected to external constancies. A change in external conditions inevitably alters the results of actions based on previously existing self and external constancies. To the extent that these altered results are aversize, the individual must alter his constancies. Educational change, by definition, involves altering the external conditions. These changes may involve objects such as the changes resulting from an open classroom. Social events are also altered as in changes that effect the behavior of the students. In both cases people (teachers, administrators and students) will tend to have a lower predictive validity to their assessments based on their previous constancies. For instance they may lean on movable walls and find themselves flat on the floor or get frustrated by (in the instance of teachers) students who no longer maintain an attentive silence. The degree of loss of predictability depends on the nature of the change and the nature of the individual's constancies. Obviously trivial changes may produce little or no loss in predictability. Not so obvious is the ability of an individual with a broader assumptive framework to adapt. In fact change may even be pleasurable if the individual has, for instance, a self-constancy that enables him as able to function in a changing environment. More frequently, however, this upset in self and other constancies is unpleasant. One might postulate some sort of intrinsic competency motivation which is not

satisfied. Whether one does or not, there are clear and demonstrable frustrations arising from a reduced ability to act effectively. Typically this results in an increase in tension, anxiety and effort levels. All of this is aversive resulting in a desire to get out of or end the situation, in other words resistance to the change. This can be expressed in a number of ways. The most obvious is conscious action to resist the change process. Another facet may well be altered perceptions of the motivations of other people involved in the change process. Certainly a common reaction is to ascribe bad motivations to people seen as causing the problems.

Educational change also suffers from the reduction that occurs in the individual's ability to act effectively in the new environment. The individual's assumptive framework is not providing accurate assessment since the external constancies provide less accurate estimates of the actual external conditions. Again the magnitude of the change in external conditions with respect to the person's constancies will determine the extent of the difficulties that will arise. For instance the educational change may be in the direction of encouraging greater initiative on the part of the student. There are certain non-perceptual factors such as the amount of work involved, the situation, etc which will influence the student's attitude toward the change. But whatever

the balance of these factors, if the student has grown up in a school environment primarily oriented to the lecture method, the student will probably not have the constancies that allow him to act confidently in an environment where the bulk of the initiative is his. Depending on how great the disparity between his assessments and the situation, his actions may range from largely appropriate to largely inappropriate. The result is that from the standpoint of the changed system, there will be a considerable amount of ineffective actions on the part of the participants at least initially.

Humankind could not have survived without the ability to adapt, and perceptual change does occur. Transactional psychology (Kilpatrick, 1961) has identified two mechanisms of perceptual change. Reorganizational change is based on the existence of a stimulus that "gives away" the changed external situation. The distorted room experiments provide the clearest examples. Tiny imperfections in the construction of the rooms would give away the fact that the rooms were not conventionally dimensioned. As long as the person focussed on the imperfection the room would be perceived more or less as it was actually constructed. If the attention moved away from the "give away" stimulus, the perception would change back to that of a conventional room.

The second type of perceptual change is formative change. Formative changes in perceptual organization occur on a cumulative, continuing basis. They are

relatively permanent and do not rely any one stimulus to be effective. Rather they are the result of the building up of a new assumptive framework relatively independent of the specific situation. An example of formative change, again in the distorted room, would involve a person who had observed the room, been allowed to act (throw balls, poke with sticks, etc.) in the room over a period of time. The person's perception of the room would not depend on any imperfections in construction and would be unlikely to change radically despite shifts in attention from one part of the room to another.

Producing these perceptual changes requires two different types of activities. For reorganizational learning what is necessary is some type of "give away" stimulus. For formative changes experience is necessary. In general verbal descriptions of the changed perceptual situation are ineffectual (Kilpatrick, 1961). Probably this results from the fact that a person's words derive from his own experience. If he has not shared the experience to which the other person is referring, the translation of the words comes out in terms of his past experience which is incorrect. Whatever the explanation verbal descriptions are ineffectual in changing perceptual organization. Observation is somewhat more effective. Kilpatrick (1961) demonstrated that a person can undergo formative perceptual changes by observing

another person in action. However, these changes are not as rapid or great as when the person himself is the actor.

Implications for Practice- In attempting to deal with the resistance to change based on the pressure that change puts on a person's self-constancy, the first step is to determine the breadth of the gap that will exist. How wide is the gap between the constancies a person has about others and things and the actual conditions that are envisioned. The measurement of this gap has to be aimed at the ability to act. In this case the verbal philosophy is of no concern except to the extent that it can be applied to determining how effective the actor will be in the new conditions. Measurement of the gap between constancies and new conditions is likely to be most effectively done by simulations, role playing and other techniques that require actions similar to those needed in the new environment rather than verbal or written responses.

Once the size of the gap is determined, a decision can be made as to whether it is too large or not. In the situations described by Argyris (1974), Smith and Keith (1971) and Watson (1964) the gap was clearly too large. If that seems possible, the obvious strategy is to make the change more gradual, on a step-by-step basis. This will keep the size of the gap and thus the amount of ineffectiveness experienced down.

The ideal gap size is just large enough to provide enjoyable stimulation without producing enough ineffective actions to make the situation aversize.

To the extent that this condition can be achieved and if change is maintained over a long period of time, the people involved can develop a set of constancies enabling them to function in a changing environment. As they develop these constancies, the amount of change that they can deal with is likely to increase. This allows the overall speed of the change process to increase. Naturally if there is a high level of personnel turnover, these constancies are less likely to exist in the people actually in the organization.

In many cases other constraints may require that the pace of change be greater than would be dictated by an effort to produce enjoyable change. Where this situation exists there must be other contingencies that overcome the aversive nature of the changes to the people involved. This, of course supports House's (1976) observations concerning the requirement for appropriate incentives necessary to speed educational change.

Some form of training is the normal strategy for reducing the gap between previous experience and new conditions. Unfortunately the normal form of that training is some form of verbal or written instruction. As transactional theory would suggest, verbal training

is not effective (Smith and Keith, 1971). Of course verbal or written training is effective if the skills to be learned are verbal or written. However the gaps are generally those that exist in activities within the classroom and in interpersonal communication. Transactional research suggests that observational training, that is seeing the behavior exhibited, can be effective to some degree. Since observational type training, demonstration rooms, videotape, films, etc., may be relatively inexpensive, this type of training may be cost-effective. The most effective form of training is likely to be that in which the person actually experiences the situation. While most effective in a purely training situation, this type of training is also the most expensive. Simulations, role playing, games and other types of active experiences may be useful as a cost-effective mode of training that actually gives a form of active experience. Another strategy is to put the person in the actual situation, but provide enough support so that changes in perceptual organization can proceed rapidly. This type of activity has been shown to be effective by both Miles (1964) and Lukas and Wohlleb (1972).

Since formative learning is a continuous process, simply maintaining the new situation over time will bring about perceptual change. Obviously this relates back to the gradual change mentioned above. Change that is gradual but sustained is likely to produce less ineffective behavior as well as less resistance to change. Both Smith and Keith (1971) and Watson (1964) came to

this conclusion after observing situations in which massive changes were attempted but not sustained.

Another strategy is to incorporate the participants in the planning process. To the extent that this is done the new situation is likely to be partly the fruit of a number of peoples' ideas and experience. Since they have previous experience and perceptual sets that relate to the new system, their adaptation to it should be speeded and the gap between their constancies and the new conditions should be less. This procedure is recommended by Owens and Steinhoff (1976).

Summary- Transactional perceptual theory suggests that educational change can be speeded by a process that is both gradual and sustained. The pace of change should maintain a gap between the actual conditions and the person's constancies that is great enough to be stimulating but not enough to render actions ineffective and frustrating. Measurement of this gap should be in terms of actions required in the new situation. Maintenance of sustained, gradual change is likely to produce a set of constancies supporting change if the people remain in the organization. To the extent that these constancies are developed, the pace of change can be speeded. Verbal training is likely to be ineffective. Training geared to the actual actions required is the most effective.

Training incorporating observation of the new actions may be cost-effective in certain situations. When the involved individuals are involved in the planning of change, their experiences are likely to be incorporated. To the extent that this occurs the gap between their perceptual constancies and the new conditions will be reduced. This lowers their resistance to change and increases their effectiveness in the new situation.

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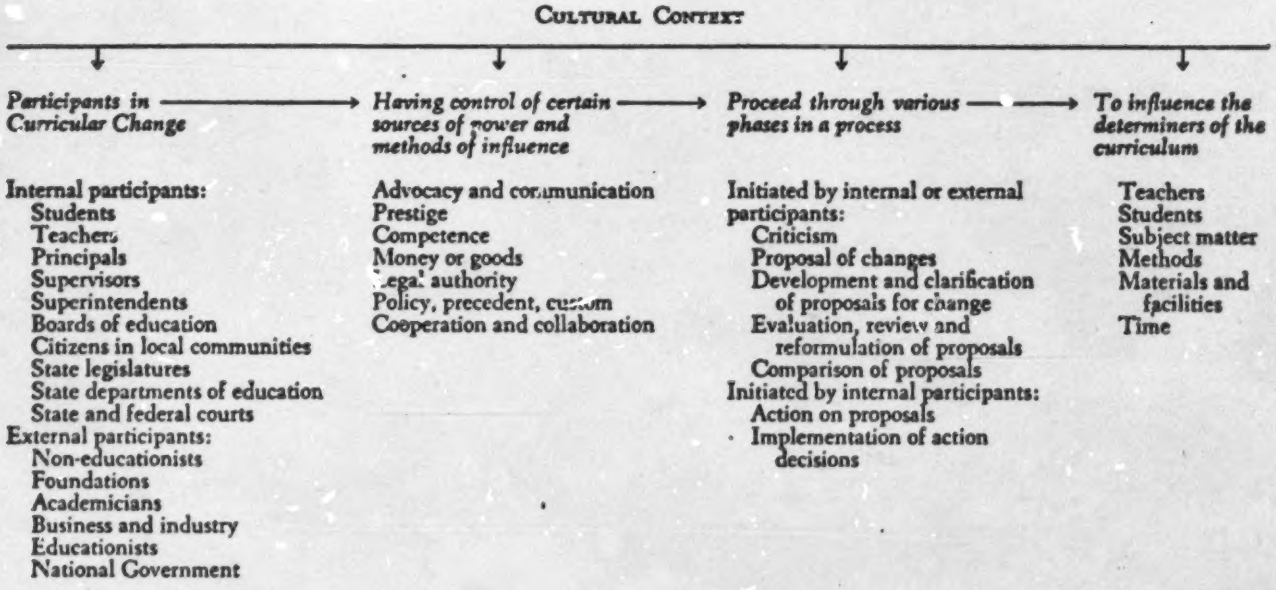


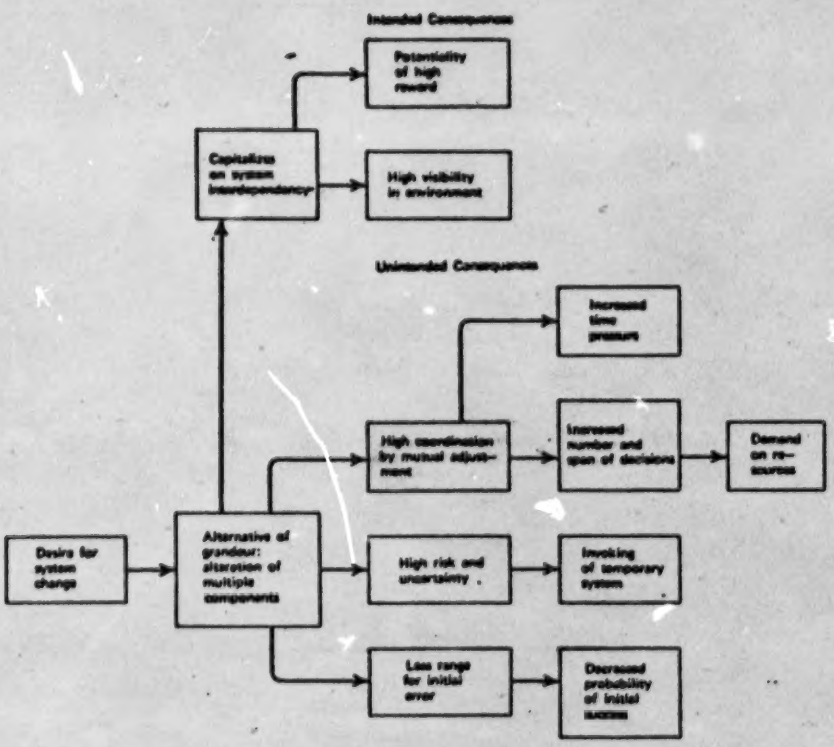
Figure 1. Cultural context and the change process. (After MacKenzie, 1964)

	Increase	Decrease
House, 1976	1. Increase outside contacts 2. Increase incentives	
Griffith, 1964	1. Outside support 2. Organizational head from outside	1. Heirarchical organization 2. Head of organization with long tenure 3. Functional subsystems
Miles, 1964	1. Innovations that are materials 2. Implementation support 3. Innovation/system congruence 4. Increase in user autonomy 5. Innovator from outside system 6. Use of temporary systems 7. Outside support	1. Lack of hard data 2. Lack of incentives 3. Lack of change agents 4. Bureaucratic organization 5. High cost 6. Not suitable for commercial distribution

Figure 2. Factors identified by theorists.

Type	Characteristic
Non-adopters	1. Less formal education
	2. Fewer friendship contacts
	3. Know and known less by peers
	4. Attend fewer professional meetings
	5. Interact less with other superintendents
	6. Sought for advice less
	7. Lower professionalism score
	8. Less prestigious districts
	9. Less supported by school board
	10. Rely more on local sources of information and advice
Innovators	1. Younger
	2. Know fewer peers
	3. Sought less for advice
	4. Higher professionalism score
	5. Greater accuracy in estimating rate of adoption
	6. Shorter tenure in position
	7. Seek outside advice

Figure 3. Characteristics of non-adoptive and innovative superintendents of school. (After Carlson, 1965)


Intended Consequences
Potentiality of high reward
Capitalize on system interdependency
High visibility in environment
Unintended Consequences
Increased time pressure
High coordination by mutual adjustment
Increased number and span of decisions
Demand on resources
Desire for system change
Alternative of grandeur: alteration of multiple components
High risk and uncertainty
Invoking of temporary system
Less range for initial error
Decreased probability of initial success

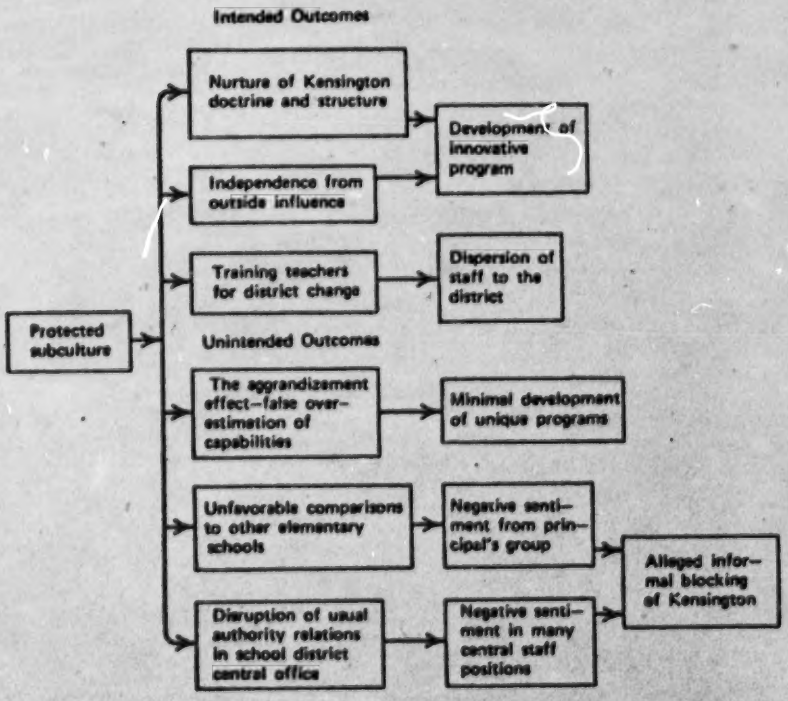

Intended Outcomes
Nurture of Kensington doctrine and structure
Development of innovative program
Independence from outside influence
Training teachers for district change
Dispersion of staff to the district
Protected subculture
Unintended Outcomes
The aggrandizement effect—false over-estimation of capabilities
Minimal development of unique programs
Unfavorable comparisons to other elementary schools
Negative sentiment from principal's group
Alleged informal blocking of Kensington
Disruption of usual authority relations in school district central office
Negative sentiment in many central staff positions

Figure 4. Outcomes of multiple changes and protected subculture. (after Smith and Keith, 1971)

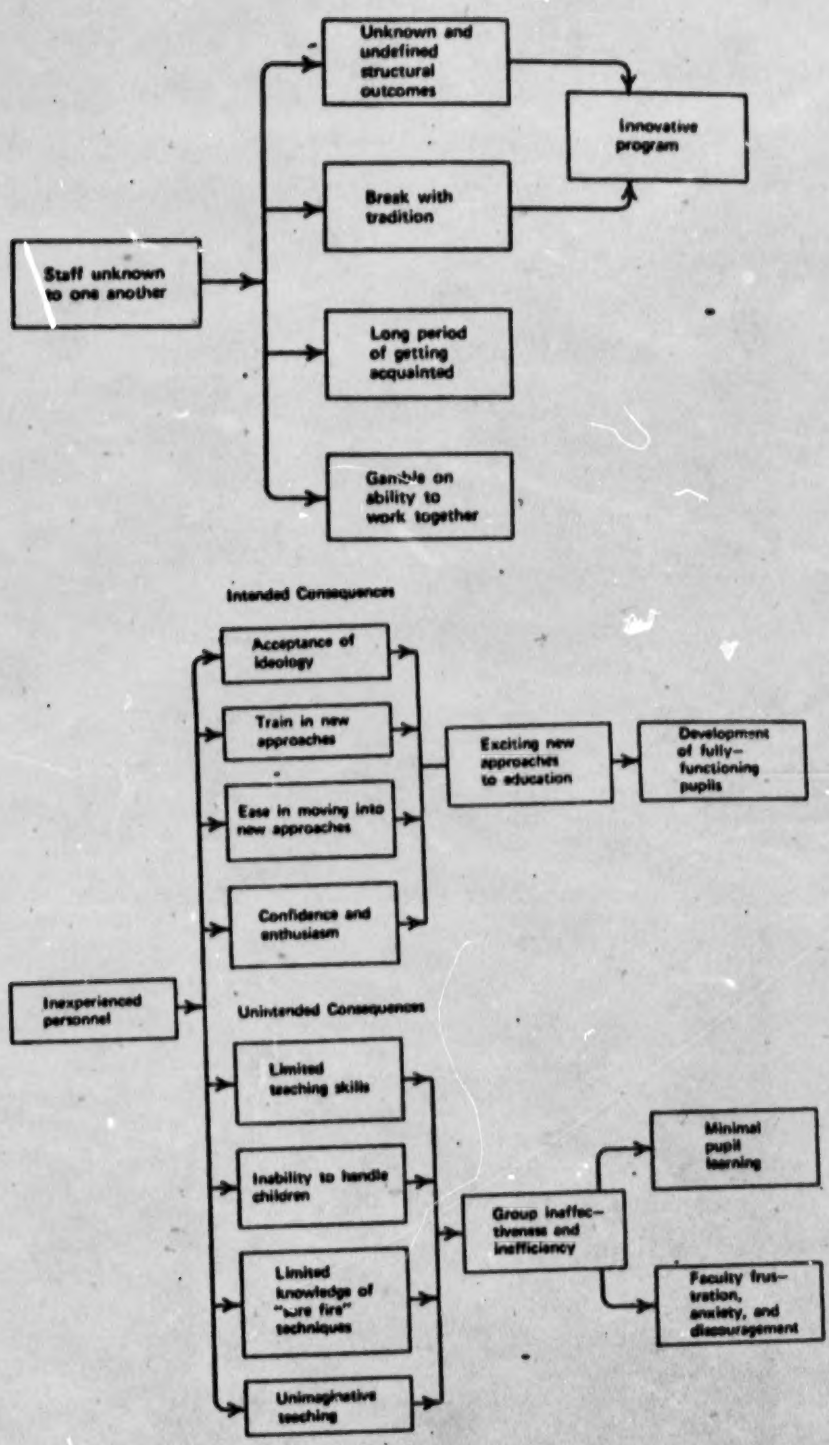


Figure 5. Outcomes of an inexperienced staff unknown to each other. (After Smith and Keith, 1971)

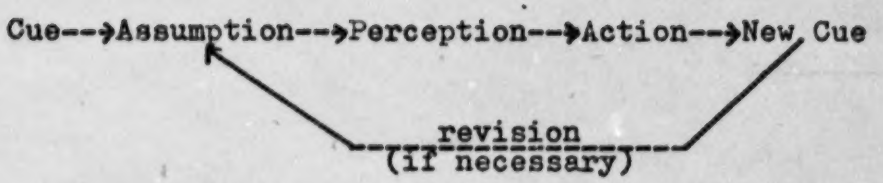


Figure 6. Process of change in the assumptive framework.